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416/978-2066

Janet Campbell, Editor

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University of Toronto

COMPUTERNEWS

December 76 ISSN 0315-4661 No.143

COMPUTERNEWS is a monthly publication produced by the University of Toronto Computer Centre. Enquiries or contributions should be directed to the Editor, Janet Campbell or the Assistant Editor, Margo Harvie in the Sandford Fleming Building, room 137 or (416)-978-2066. Layout and ATS typing are provided by Kathryn Bourne. Subscription changes should be directed to the Information Office, Sandford Fleming Building, room 128 or (416)-978-4990.

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CUSTOMER SERVICE

The former Marketing Services group of UTCC has been renamed Customer Service. We have done this in order to re-emphasize the objectives and functions of this group. Customer Service aims to fulfill a service function by acting as ´customer co-ordinators´ for all aspects of computing. The group reports to Stan Yagi, Services Manager and consists of the following people:

Bill Foster (Supervisor)	978-6021
Kurtis Bishop	-6133
Ruth Borenstein	-6355

The following are the main functions of the Customer Service Group:

1. Consulting:
   Customer Service consults with customers on specific systems applications. We analyse customer problems, recommend data processing solutions, assist customers in estimating their computing budget and play a key role in guiding projects to a successful completion.

2. Development:
   We actively promote UTCC facilities and services to customers as problem solving tools. We endeavor to develop and expand the customer base, both inside and outside of the university community.

3. Interface:
   Customer Service is available to help users plan and launch new projects as well as to provide consulting services during the execution phase of the project. We hope that by our close contact with the user community, we can provide the liason between the user and the Computer Centre which will make for optimal service. Just as the Computing Co-ordinators are available to field day-to-day computing problems, our group provides the customer with a means of solving his long-range, overall computing problems.

4. Customer Support:
   We support our current users with a continuing series of visits and by providing suggestions or recommendations for system improvements and new applications.

5. Products:
   Customer Service makes recommendations to UTCC management regarding product lines and services by identifying demand for new services and suggesting possible improvements for existing products.

Customer Service is prepared to deal with your computing problems. Call any of the Customer Service representatives listed above or Stan Yagi (978-7331) if you are considering, or have considered, computing as a solution to your problem.

Bill Foster

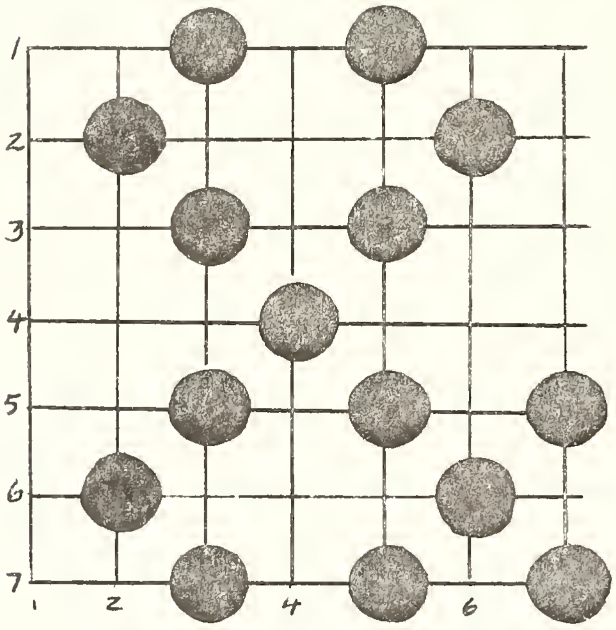
DESIGN YOUR OWN CHARACTER SET

The computer has already established its reputation as an indispensible tool in the study of science and mathematics. Recently, there has been a growing recognition of the computer´s capability for processing and analysing data in other areas like languages and linguistics. A major obstacle to the application of computer methods to language-oriented disciplines is the need for a variety of non-standard character sets eg. accents, foreign alphabets etc. At the University of Toronto Computer Centre, Eugene Siciunas has developed a method of ´programming´ a DECwriter computer terminal to produce the particular character set required by the user.

cont´d...

DESIGN YOUR OWN cont'd

On the DECwriter, printing is achieved via an impact print head. This print head consists of seven solenoid-driven pins arranged in a vertical column. Each time a character is to be printed, the print head is stepped from left to right in seven distinct steps, thus defining a 7 x 7 matrix of dot positions within which any character may be formed. By specifying which pins of the print head should fire in each column of the matrix, any character may be printed. For example, the diagram below shows how the ampersand (&) would appear in the 7 x 7 matrix.



The character is imprinted on the paper when the pins in the print head are driven against an inked ribbon positioned between the print head and the paper.

The terminal's character set is stored in an 8K ROM (Read Only Memory). During printing, characters transmitted from the host computer or local keyboard are decoded by the ROM into pin firing instructions. The standard DECwriter comes equipped with a ROM containing the ASCII character set. In order to provide alternate character sets, UTCC has added a Programmable ROM (PROM) and switch to allow the user to select the DEC- provided ROM or the user's PROM. This PROM can be programmed with almost any character set eg. Greek, French, Sanskrit etc. The new character set is stored in the PROM by manually encoding the characters on a black box called a PROM programmer. This programmer can be used to prepare an almost endless variety of characters with the restriction that the character must be reproducable within the 7 x 7 matrix.

Professor John Hurd of the University of Toronto has designed a Greek character set using UTCC's system. The Greek keyboard/character set and a Computer Assisted Instruction (CAI) system provide valuable learning aids for students studying Greek.

Users interested in more detailed information on UTCC's keyboard design system are invited to contact Eugene Siciunas at 978-4967.

Janet Campbell

THE 8TH ONTARIO UNIVERSITIES COMPUTING CONFERENCE - CALL FOR PAPERS

The 8th Ontario Universities Computing Conference will take place in Waterloo, Ontario, from May 30-31, 1977. This conference will explore new computing technologies and new approaches to computing in post-secondary institutions. Teaching, Administrative Computing, Research and Computing Services have been suggested as possible topics, but those submitting papers should not feel confined to these areas.

cont'd...

THE 8TH ONTARIO cont´d

The 8th OUCC would like to present the viewpoints of both computer users and computing centre personnel. If you have a presentation to make, or wish to participate in a panel discussion, then the 8th OUCC is your opportunity to discuss and exchange ideas.

Presentations should not exceed 30 minutes and may be less if you wish. An overhead projector, slide projector and screen will be available. Please submit a one or two page outline, and an estimate of the speaking time, by January 15, 1977 to:

Program Committee, 8th OUCC
Computing Centre,
University of Waterloo,
Waterloo, Ontario, Canada
N2L 3C1

The Program Committee will review all submissions and notify you of the acceptance of your talk by February 15, 1977. A camera-ready copy of each presentation will be required prior to the conference, for publication in the proceedings.

COMPUTER PRODUCED BIBLIOGRAPHIES

Take advantage of the U of T Library´s new computer based catalogue information services.

The Library is once again offering computer produced bibliographies of books in its collections, and now two formats of bibliography are available:

1. bibliographies printed directly by computer
2. bibliographies produced via printout of the computerized microcatalogue

Costs vary according to the size of the bibliography although the average cost is estimated to be about $3.

For more information, enquire at the Reference desks of: Robarts Library; Science and Medicine Library; Engineering Library; Sigmund Samuel Library.

ATTENTION MARK IV USERS

On or about January 12, 1977 MARK IV will be upgraded to Release 6.0. This release provides only minor enhancements to the user and is intended primarily to increase reliability and performance.

Updates to the MARK IV manuals may be ordered from the UTCC Information Office, Sandford Fleming Bldg., room 128. Please place your order as soon as possible.

This upgrade is expected to be completely transparent to users but in the event of any problems please contact the University of Toronto MARK IV Co-ordinator:

Mr. Jerry Novak
167 College Street
Room 210
978-2189

Jerry Novak

SCRIPT SCRIPTS

IMBED

One useful feature of the new SCRIPT processor accepts input that is a mixture of fixed and variable input records. This makes it easy to imbed card-image members into a textual description. For example,

```
Subroutine MXQP11
.sp
This subroutine is used to...
.sp
.fo no
.im  mxqp11
```

would produce a formatted description of the subroutine, followed by an unformatted listing of the subroutine, assuming its source library were allocated to SYSLIB. Note that in most cases line numbers will be removed from the source listing. This is usually desirable since the line numbers are subject to change and are quite a distance to the right of the right margin.

The imbed feature is also useful when output from another program is used as SCRIPT input. Headings, footings and remotes can be defined in a file which is imbedded. This makes it easier to change these definitions, since the other program need not be changed. As an example, consider the following FORTRAN code.

```
      WRITE(10,10)
 10   FORMAT('.IM HEADFOOT')
      DO 20 J = 1,N
      .
      .
      .
      WRITE(10,15)NAME, ADDRESS, PHONE
 20   CONTINUE
 15   FORMAT(25A1)
```

where the omitted lines were used to generate or read the information used to produce SCRIPT input for a mailing list.

Please refer problems and/or suggestions to Ian Darwin, room 303, 49 St. George, 978-7318.

Ian Darwin

NEW SHARP APL PUBLIC LIBRARY CATALOG

The second edition of the SHARP APL PUBLIC LIBRARY CATALOG is now available in the SHARP APL workspace, 1 CATALOG.

This edition of the CATALOG has been expanded to reflect the new organization and distribution of the APL Public Library programs supported at UTCC.

Some of the new features are described below.

1. An OFFLINE option has been added which allows all, or part, of the CATALOG to be listed offline on the high-speed line printer in a convenient page format.

   Users should note that the OFFLINE option is intended to be used for listing CATALOG documents with the APLFULL train (for a description of this print train see the newsletter article below). However, the OFFLINE option is available now in order to meet the current demand for APL library documentation and gives good results using the software supported translate table to print APL-like characters with the TN-STND train.

   The CATALOG is massive, with over 600 pages and 40,000 lines of print. However, it is possible for users to offline only the sections of the CATALOG which are of interest to them by entering the following APL statements:

)LOAD 1 CATALOG	Load the CATALOG workspace
OFFLINE 'filename'	Designate a print file
PAGES SECTION n1,n2,n3,..	Offline the sections numbered n1,n2,n3,..

cont'd...

NEW SHARP APL PUBLIC cont'd

To obtain a brief summary of the new CATALOG, enter

```
)LOAD 1 CATALOG

PAGES INDEX
```

2. The new CATALOG defines more comprehensively all of the workspaces and APL programs related to each of the application areas which it covers. This is especially true of those applications for which APL is particularly effective. Programs that support problem solving in the following areas are extensively documented:

   -econometrics
   -linear programming
   -matrix analysis
   -interpolation, approximation and numerical integration
   -parametric and non-parametric statistics

   Updates and new editions to the CATALOG and SHARP APL Public Library system will be announced in the SHARP APL HOTNEWS facility. To get the latest headline,

   ```
   )LOAD 1 HOTNEWS
   ```

   University of Toronto DATATALK maintains the CATALOG and the HOTNEWS facility. All related inquiries should be directed to DATATALK at 978-6710.

APLFULL PRINT TRAIN - JANUARY, 1977

The APLFULL print train is expected to arrive and be in service by the end of January, 1977.

This print train has all of the APL graphics, all of the upper and lower case Roman graphics of the TN-STND train, most of the special graphics of the TN-STND train (notable exceptions being superscript numerals) as well as some graphics which are not available on any other print train currently supported by UTCC.

The APLFULL train will become the default train for SHARP APL initiated FILEPRINTS from the workspace 1 FILEPRINT. All other services will be able to access this print train through normal UTCC forms code and route print processing. The following new facilities and services will be available:

1. ATS Access to APL Graphics

   It will be possible to access the APLFULL print train from ATS through normal UTCC forms code processing. Upper and lower case Roman text, and certain other TN-STND characters which are available on the APLFULL train can be entered as usual. APL graphics to be embedded in the text can be generated using the ATS overstrike processing. A full description of the two buffer loads(hexadecimal addressing) supported for the APL train will appear as an update to the USERBOOK module 3.8PRINTRAINS.

2. High-speed Printing from APLSV

   APLSV supports high-speed line printing of APLSV-generated print files and reports through more or less normal HASP spooling and accounting techniques based on the APLSV SAC alone. Documentation and support utility functions are available in the APLSV workspace 3 HSPRINT.

cont'd...

APLFULL PRINT TRAIN cont'd

3. Offline Automatic APL Workspace Listing

The automatic APL workspace listers and formatters in the SHARP APL and APLSV workspaces 4 WSL have been upgraded to support an OFFLINE option which allows the high-speed line printing of all APL source code (function definition) in the active APL workspace.

Detailed documentation on how to use the workspace listers, with or without the OFFLINE option, is available in the SHARP APL workspace 4 WSL, in Section 4 of the SHARP APL CATALOG, or in the APLSV workspace, 4 WSL. The interface programs are basically the same, except that in the case of APLSV, it is not necessary to allocate a temporary print file.

4. SHARP APL FILEPRINT Utility

The APLFULL print train will automatically be mounted for SHARP APL FILEPRINT requests. This entails no change to user programs. However, the SETUP function and the MREQ function in the SHARP APL workspace 1 FILEPRINT have been upgraded to accept a UTCC forms code, route print information, and a number of copies specification (up to 25 copies may be printed in a single file print request). This information may be entered freeform in the SETUP function as SPECIAL INSTRUCTIONS.

The functions MREQ and PRINTREQ in the workspace 1 FILEPRINT, now look for the keyword codes

COPIES=number of copies (up to 25)

FORMS=UTCC forms code

ROUTE PRINT=UTCC destination code

prior to making the actual fileprint request to the system utility programs. Default options are as follows:

- one copy
- standard 11" x 15" blank forms
- printed at ITS
- APLFULL train mounted

Ernst Goetze

PERSONNEL CHANGES

Ruth Borenstein , formerly an Assistant Editor in the Publications Group, has transferred to Customer Service at 49 St. George Street. Best wishes to you in your new job, Ruth.

June Bridges

GPJS - SOFTWARE USAGE STATISTICS

The following chart summarizes the software usage per classified procedure and program name for the General Purpose Job Stream from November 1 to December 1, 1976.

SOFTWARE	USES (#JOBSTEPS)	(%)
ALGOL	80	0
APLSV	16	0
ASM	1,219	4
ATSUTIL	2	0
COBOL	705	2
CSMP	157	1
DATATEXT	87	0
DBUGUTIL	11	0
DISKUTIL	2,169	7
DSUTIL	4,666	15
DYNAMO	21	0
FORMAC	9	0
FORTRAN	8,332	27
GPSS	428	1
GRAPHICS	2,069	7
JCLUTIL	230	1
LISP	83	0
MARKEXAM	44	0
MARKIV	440	1
MPS/MPSX	301	1
OSUTIL	322	1
PAPERTAP	57	0
PL/I	1,938	6
RPG	40	0
SAS	140	0
SERVAID	206	1
SNOBOL	1,073	3
SORTMERG	1,268	4
SPEAKEZ	40	0
SPSS	2,905	9
SSP/BMDD	685	2
TAPEUTIL	395	1
TIPRS	264	1
TSO	46	0
XFR	424	1
TOTAL	30,872	

Kin Fong

S/360-65 RELIABILITY

The uptimes achieved for the month of November for each of APL and ATS were 98.23% and 98.29% of scheduled operation, respectively. The number of scheduled hours of operation for this month totalled 490, while the number of unscheduled IPL's per day was 0.10. In addition to the regular scheduled hours, S/360 services were also available for approximately 110 hours of unattended weekend operation.

The percentage breakdown of total system downtime for November was: 446 minutes (89.6%) if system downtime due to hardware problems and 52 minutes (10.4% attributed to other, non-hardware problems. IPL's were required as a result of the failures. The major events contributing to downtime were as follows:

NOV 1: 42 minutes downtime resulted when ATS control terminal was switched off during ROLLIN and backups overlapped into normal production hours.

A total of 305 minutes of downtime were attributed to a hardware failure in one of the disc control units and corrective maintenance was required to resolve this problem.

NOV 2: 134 minutes downtime and one Re-IPL was attributed to previous hardware problems in the disc control unit. Customer engineers replaced a bad card at location A2A1E4.

NOV 24: Re-IPL was necessary in order to recover 1403 printer which was powered down during IPL for preventive maintenance - 10 minutes downtime.

NOV 30: 7 minutes down - 1 system reload. The downtime was attributed to a machine check during which ROS parity instruction retry was unsuccessful.

Kam Jain

S/370-165-II RELIABILITY

The reliability statistics for November indicate an uptime percentage of 98.2 while the average number of unscheduled IPL´s per day reached 1.1. The number of scheduled hours of production for November totalled 504.

MONTHLY COMPARATIVE

MONTH	% UPTIME	UNSCHED. IPLs/DAY
Jan/76	99.1	0.43
Feb/76	98.9	0.97
Mar/76	96.8	1.03
Apr/76	99.3	0.52
May/76	98.8	0.67
Jun/76	96.5	0.97
Jul/76	96.4	0.72
Aug/76	99.4	0.47
Sep/76	98.4	0.86
Oct/76	96.9	0.83
Nov/76	98.2	1.10

The percentage breakdown for total system downtime for November was:

HARDWARE: 374 minutes (69.5%)
SOFTWARE: 144 minutes (26.8%)
OTHER : 20 minutes (3.7%)

The major events contributing to these downtime totals were as follows:

Nov 4 - 59 minutes down - 4 IPL´s

All time charged to channel errors on the ITEL controller attached to channel 4. Production was up with channel 3 and HSJS only for 3 1/2 hours while corrective maintenance was in progress. A number of cards were replaced in the channel 4 control unit.

Nov 16 - 45 minutes down - 2 IPL´s

a. 5 minutes attributed to loss of all local I/O.

b. 40 minutes due to DISASTROUS errors on the HASP spool volume which required a cold start. All XEQ was recovered with problems.

Nov 18 - 60 minutes down - 1 IPL

All time resulted from "channel data checks" caused by the ITEL memory. A faulty card was replaced.

Nov 19 - 30 minutes down - 2 IPL´s

All time due to two IGF006W machine errors followed by A04 waits. Both resulted from I/O errors on address 450.

Nov 20-21 - 150 minutes down - 4 IPL´s

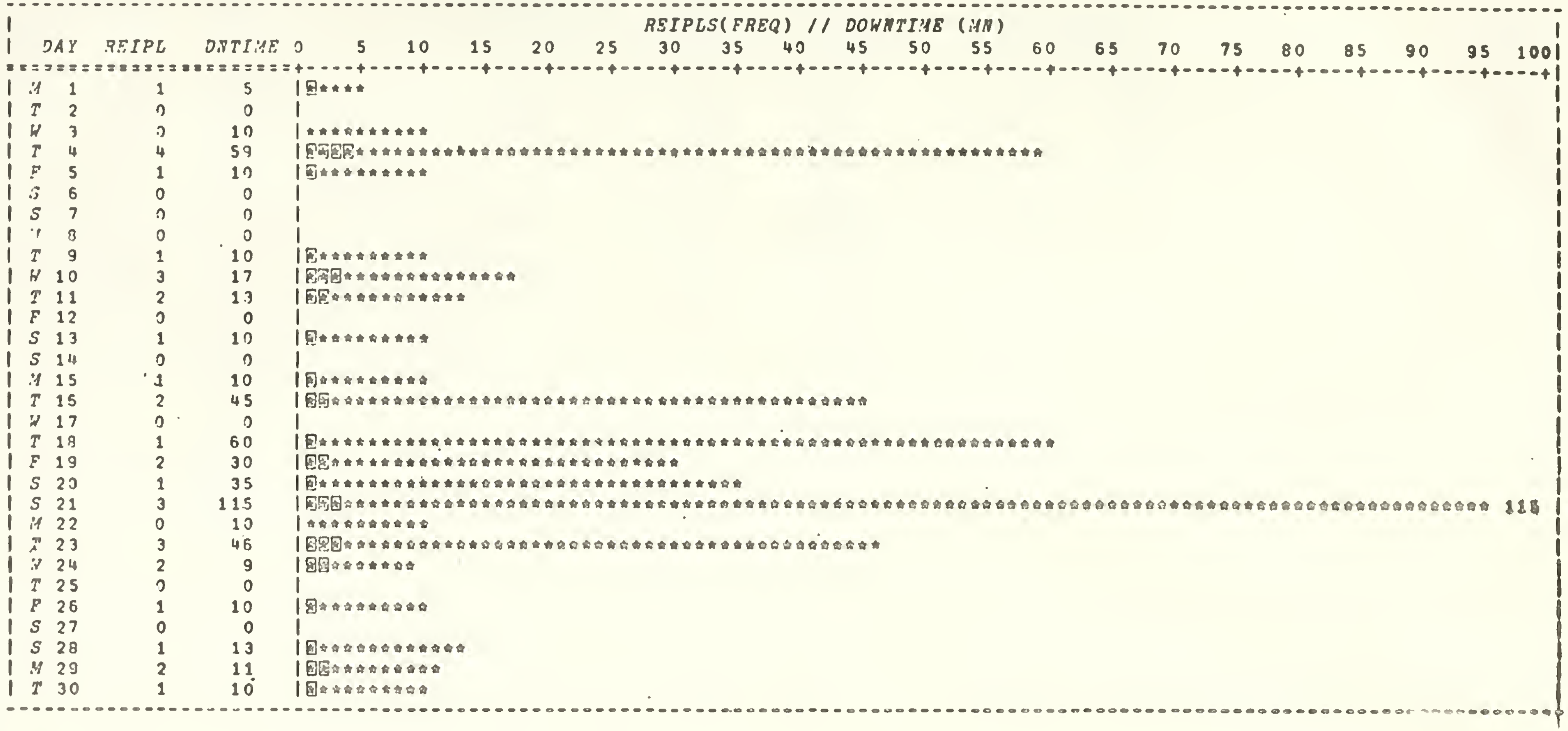
All time charged to a bad "chip" in the ITEL controller on channel 4. Production was up with only channel 3 and HSJS active for a period of 10 hours. Replacement "chips" from local stock and from Montreal proved faulty. One eventually arrived from Chicago which rectified the problem.

Nov 23 - 46 minutes down - 3 IPL´s

a. 35 minutes charged to corrective software maintenance to remove a faulty ZAP applied to HSJS accounting.

b. 11 minutes due to two solid supervisor loops.

Paul Scarborough



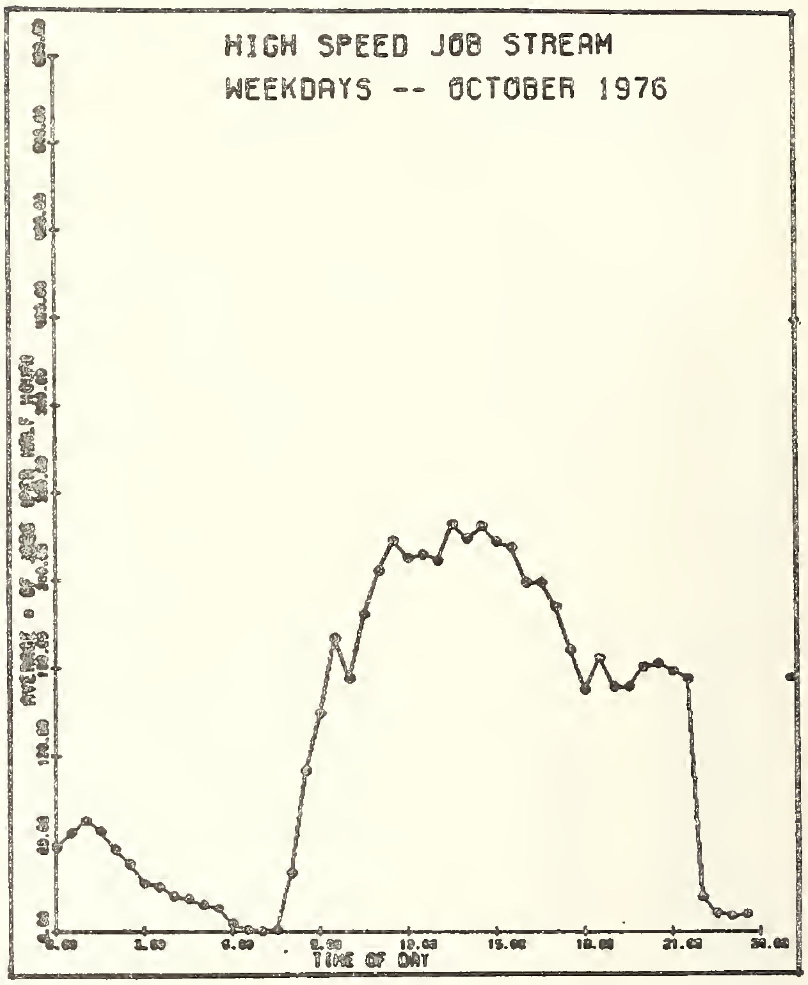
```
DOWNTIME_REPORT_ON___S/370__FOR_NOV_76

                                     REIPLS(FREQ) // DOWNTIME (MN)
 DAY  REIPL   DNTIME 0   5   10   15   20   25   30   35   40   45   50   55   60   65   70   75   80   85   90   95   100
 M  1    1       5
 T  2    0       0
 W  3    0      10
 T  4    4      59
 F  5    1      10
 S  6    0       0
 S  7    0       0
 M  8    0       0
 T  9    1      10
 W 10    3      17
 T 11    2      13
 F 12    0       0
 S 13    1      10
 S 14    0       0
 M 15    1      10
 T 16    2      45
 W 17    0       0
 T 18    1      60
 F 19    2      30
 S 20    1      35
 S 21    3     115                                                                                                   115
 M 22    0      10
 T 23    3      46
 W 24    2       9
 T 25    0       0
 F 26    1      10
 S 27    0       0
 S 28    1      13
 M 29    2      11
 T 30    1      10

LEGEND        : ONE □  =ONE UNSCHED. IPL
                ONE *  =ONE MINUTE OF DOWNTIME
                TOTAL SCHEDULED HOURS OF PRODUCTION :  504
                TOTAL DOWNTIME (MN)  :  538 , AVG/DAY :  17.93 , AVG/PROD HOUR :   0.53
                TOTAL UNSCHED. IPL'S :   33 , AVG/DAY  :   1.10
                DOWNTIME RATE IS     :  1.78 PERCENT OF SCHEDULED PRODUCTION HOURS
```

HSJS MONTHLY STATISTICS

During the month of November, 1976, 166,540 jobs were processed compared with 222,075 jobs for the previous year, a decrease of 25%.

The following charts summarize the HSJS activity for the month of November. The graph represents the average number of jobs processed during each half hour period of the day.

Mark Tapia



```
RESOURCE USAGE BY PROCESSOR

                                ||         TOTAL PER PROCESSOR          ||     AVERAGE PER USE        |
                                ||   CPU    |  #CARDS   |   #LINES      ||  CPU   |#CARDS |  #LINES    |
PROCESSOR | #USES %TOTAL||  (MIN)   |   READ    |  PRINTED      || (MIN)  | READ  |  PRINTED   |
-----------------------------------------------------------------------------------------------------
WATFIV    | 53034  (31)  ||  646.94  |  7385485  |   8988988     || 0.012  |  128  |    128     |
SP/K      | 44111  (26)  ||  695.25  |  4110902  |   7556112     || 0.016  |    0  |    128     |
PL/C      | 36114  (21)  ||  587.38  |  4758565  |   8968337     || 0.016  |  128  |    128     |
WATBOL    |  9752  ( 5)  ||  142.63  |   715647  |   1130259     || 0.015  |    0  |      0     |
SIMON     |  5735  ( 3)  ||   11.44  |   255308  |    409077     || 0.002  |    0  |      0     |
SNAP      |  4708  ( 2)  ||   54.00  |    71669  |    644602     || 0.011  |    0  |    128     |
SPSSQ     |  3525  ( 2)  ||   48.44  |   255305  |    521613     || 0.014  |    0  |    128     |
UTILITY   |  3387  ( 2)  ||    7.19  |   470822  |    596794     || 0.002  |  128  |    128     |
SPITBOL   |  2829  ( 1)  ||   38.31  |   510853  |    713321     || 0.013  |  128  |    128     |
LISP      |  1392  ( 0)  ||   21.38  |   287739  |    512891     || 0.015  |  128  |    256     |
ALGOLW    |   888  ( 0)  ||   10.81  |   231850  |    269042     || 0.012  |  256  |    256     |
ASMG      |   776  ( 0)  ||   16.13  |   156618  |    260834     || 0.021  |  128  |    256     |
UTILITY   |   126  ( 0)  ||    0.06  |     5346  |      6575     || 0.000  |    0  |      0     |
$         |   123  ( 0)  ||    0.50  |     7411  |     10376     || 0.004  |    0  |      0     |
ASSIST    |    28  (· 0) ||    0.13  |     4879  |      6891     || 0.004  |  128  |    128     |
PLUTO     |    12  ( 0)  ||    0.06  |     1659  |      2611     || 0.005  |  128  |    128     |
SP/KM     |     0  ( 0)  ||    0.00  |        0  |         0     || 0.000  |    0  |      0     |
UTILITY   |     0  ( 0)  ||    0.00  |        0  |         0     || 0.000  |    0  |      0     |
-----------------------------------------------------------------------------------------------------
TOTAL       166540       ||-1814.94  | 19230058  |  30598323     || 0.014  |    0  |    128     |
```

RECENT ACQUISITIONS IN THE DEPARTMENT OF COMPUTER SCIENCE LIBRARY

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UTCC COMPUTER EQUIPMENT

SYSTEM/370 MODEL 165-II

- located in SF103/105/112
- provides General Purpose Job Stream, High Speed Job Stream, APL SV and TSO services
- 4 megabytes of memory
- 1 drum (2301)
- 16 disk drives (3330)
- 9 disk drives (2314)
- 6 magnetic tape drives (4 9-track and 2 7-track)
- 6 display consoles
- 6 printers
- 5 card readers
- 1 card punch
- 8 remote batch terminals
- 1 paper tape reader
- Calcomp plotters (11" and 30")
- Gould plotter (11")
- OS/MVT with HASP

SYSTEM/360 MODEL 65

- located in McLennan Physical Laboratories
- provides APL and ATS services
- 1536K bytes of core
- 26 disk drives (2314)
- 3 9-track magnetic tape drives
- 1 printer
- 1 card reader
- 1 card punch
- 140 typewriter terminals
- OS/MVT with APL and ATS

COMPUTER RESEARCH FACILITY

- located in SF207
- DEC GT44 Systems with
  - 1 PDP-11/40 CPU
  - 2 9-track dual density tape drives
  - 1 1000 cpm card reader
  - VT17 graphics display unit
  - 1 lab. peripheral system with A/D & D/A
  - 1 CVI 260 Video Bandwidth Compressor
- DEC GT40 System with
  - 1 PDP-11/10 CPU
  - 1 2314 tape disk drive
  - 1 VT12 graphic display unit
  - 9-track/800 BPI tape drive
  - 1 Calcomp microfilm plotter

UTCC DIRECTORY

	ROOM	PHONE
ACTING DIRECTOR		
Rein Mikkor	SF116	5058
INFORMATION OFFICE		
General Inquiries	SF128	4990 or 4991
Marg Doherty	SF128A	8995
MANAGER, SERVICES		
Stan Yagi	SG200	7331
INFORMATION SERVICES		
Don Gibson	SF128	5568
SUPERVISOR, CUSTOMER SERVICES		
Bill Foster	SG301	6021
COMPUTING CO-ORDINATORS		
Sandford Fleming Terminal		
Mark Tapia	SF125	7109
Program Advisors	SF117	8599
Erindale		
Clem DiPlacido		828-5311
Scarborough		
Martin Hubel		284-3173
Arts and Science		
Jill Reece	SS2104	6509
New Physics		
Bob Chambers	NP1201	8823
SUPERVISOR, APPLICATIONS SUPPORT		
Herb Kugel	SG304	7286
MANAGER, OPERATIONS		
Derry Cox	SF113	7092
SUPERVISORS, OPERATIONS		
Paul Scarborough (S/370-165-II)	SF114	6220
Kam Jain (S/360-65)	NP333	7374
Dave Wong (S/370-155)		6864
MANAGER, SYSTEMS		
Rein Mikkor	SF116	5058
SYSTEM HARDWARE SUPERVISOR		
Eugene Siciunas	SF113	4967
MANAGER, COMPUTER RESEARCH FACILITY		
Dennis Smith	SF214B	4800
LAB CO-ORDINATOR (CRF)		
Krishna Patnaik	SF207	4086
ACCOUNTS		
Ann DeFazio	SF139	7148
Wynona Bardgett	SF139	8702
ACCESS CODES		
Yvonne Bowen	SF139	8703
MANAGER, INFORMATION SYSTEMS		
Sean Keeley		3579

NOTE:

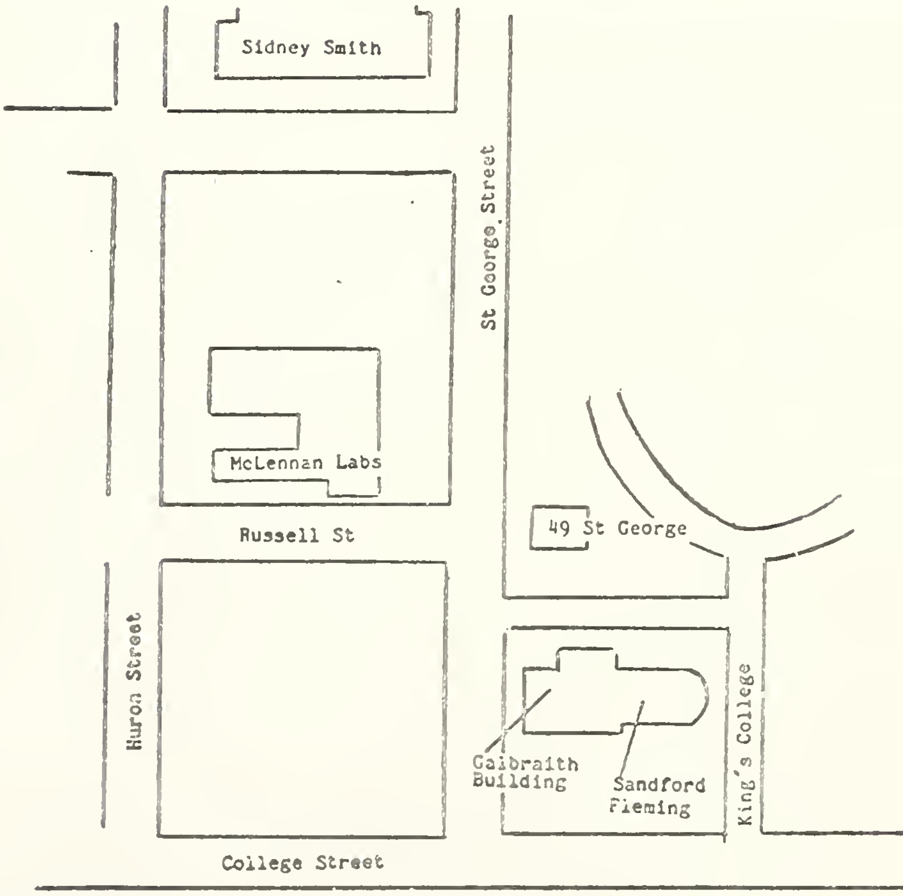
SF = Sandford Fleming
SG = 49 St. George
NP = McLennan Physical (New Physics)
SS = Sydney Smith

JOB AND SYSTEM STATUS QUERIES

SYSTEM/370,TSO	7373
ATS/APL	6234
2741 TERMINAL MALFUNCTIONS	7107
029 KEYPUNCH MALFUNCTIONS	6465

SERVICES

	DIAL-UP	ADVICE
APL - 2741	7200	6710
APL(ASCII	7200	6710
APL SV - 2741	7239	6710
APL SV - TTY	7447	6710
ATS	7100	7107
TSO - 2741	7303	8599
TSO - TTY (10 cps)	7390	8599
TSO - TTY (30 cps)	7386	8599
DATATALK	6710	6710



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